

APPLYING THE BIO-ECOLOGICAL MODEL OF INTELLIGENCE TO THE WECHSLER SCALES IN THE BAHAMAS

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ABSTRACT

This paper contains information about theory and application of the bio-ecological model of intelligence by Sharon Gopaul-McNicol. The validity, reliability, and normative samples of the Wechsler scales for children will be described. Examples of how this model is applied to the Wechsler scales will be demonstrated. Emphasis will be placed on children of varying cultures living in The Bahamas. Twenty-nine Bahamian children completed the Wechsler Intelligence Scale for Children, Third Edition (WISC-III) in The Bahamas using the bio-ecological model of intelligence. This small sample revealed that once this model was utilized the Bahamian children improved their intelligence quotient (IQ).

INTRODUCTION

The bio-ecological model of intelligence was developed by Gopaul-McNicol and Armour-Thomas. After years in the fields of psychology and education, respectively these practitioners were concerned for culturally and linguistically different students. Their concern was that students' psychometric potential was not being adequately represented by the present intelligence tests. The intelligence tests such as the Wechsler scales, Woodcock-Johnson, and Stanford Binet are tests normed on the United States (U.S.) population but are being used on non U.S. students. The bio-ecological model can provide a solution to finding the psychometric potential of students in The Bahamas when utilizing U.S. tests.

When the Department of Education in The Bahamas determines that a child 5 years or older suffers from any disability and the parent does not comply

with the examination then the parent will have a fine not to exceed fifty dollars (The Government of The Bahamas, 1996). In the U.S. the rights of children with disabilities are protected by the following laws: public law 94-142, Section 504, Americans with Disabilities Act of 1990, and Individuals with Disabilities Education Act (IDEA). The law in The Bahamas 21 (2) (The Government of The Bahamas, 1996) states that

the special educational treatment of pupils of any such category shall, in so far as the resources of the Minister permit, provide for the education of pupils with serious disabilities in special schools, or where the disability is not serious, the arrangements may provide for the giving of such education in any school maintained by the Minister. Provided that, in cases where facilities for special educational treatment do not exist, the Minister shall not be obliged to accept into any maintained school a pupil with a disability of body or mind, where the acceptance of such pupil would, in the view of the Minister, adversely affect the education of other pupils in attendance at the school. (p. 13)

If The Bahamas school system had laws such as, PL 94-142, PL 99-457, PL 101-476, and Section 504 then there would be more interaction between attorney and psychologist. As a society's priorities change and individual rights are defined, legal requirements will change (Prasse, 1997).

Selection of technically adequate tests must include reliability, validity, and adequacy of test norms according to the American Psychological Association (APA) Ethical Standard 9.02 (2002) and the National Association of School Psychologists Principles of Professional Ethics (NASP-PPE, IV, C, #2, 2000). Test reliability includes test-retest and internal consistency reliability. Validity refers to content-related, construct, and criterion-related validity. The adequacy of norms is a sample that is representative of the student being evaluated (Jacob-Timm and Hartshorne, 1998; Koocher and Keith-Spiegel, 1998). Also, up to date standardization is needed in order to make appropriate recommendations for a student (APA, 2002 Ethical Standard 9.08 – Obsolete Tests and Outdated Test Results; NASP-PPE, IV, C, #2).

The Bahamian school age population consists of children from many cultures such as Haiti, Jamaica, and other Caribbean countries, England, and Canada. The use of the bio-ecological model of intelligence for a school psychologist should prove beneficial in The Bahamas. The Wechsler scales are the most utilized intelligence tests in The Bahamas. An investigation of the Wechsler scales will reveal the validity, reliability, and normative data of this instrument for Bahamian students.

THE WECHSLER SCALES WITH CHILDREN WECHSLER PRESCHOOL AND PRIMARY SCALE OF INTELLIGENCE- REVISED AND THIRD EDITION (WPPSI-R AND WPPSI-III)

The WPPSI-R was developed for children ages 2 years 11 months to 7 years 3 months. The standardization sample represented the U.S. 1986 census survey. There were 1,700 children stratified based on age, gender, geographic region, ethnicity, parent education, and occupation. Children from urban areas were over represented. It overlapped the Wechsler Intelligence Scale for Children

– Third Edition (WISC-III) by 1 year. The WPPSI-R is best for low functioning 6 year olds and the WISC-III is best for high functioning (gifted) 6 year olds. A study by Guyrke (2002) using the WPPSI-R found significant effects of parent education and ethnicity on IQ of children as well as significant effects between region and ethnicity on IQ. The internal consistency of the WPPSI-R for the IQ scales is as follows: Verbal .95, Performance .91, and Full Scale .96. Test-retest reliability over 3 to 7 week interval is: Verbal .90, Performance .88, and Full Scale .91 (Wechsler, 1989). It takes about 75 minutes to administer. Based on the attention span of children this age the administration of this test should allow children to be given breaks or several sessions. Each session should not last for more than 30 minutes.

The WPPSI-III was updated in 2002. Because it is relatively new, there was little information available. Administration time of the WPPSI-III for children ages 2 years 6 months through 3 years 11 months is 30 to 45 minutes and 45 to 60 minutes for ages 4 years through 7 years 3 months. According to Wechsler (2002) tasks are more play- like, which is more age-appropriate, and instructions are simplified.

WECHSLER INTELLIGENCE SCALE FOR CHILDREN-THIRD AND FOURTH EDITIONS (WISC-III AND WISC-IV)

The normative sample of the WISC-III is 2,200 children. This sample represents the 1988 U.S. census. The WISC-III is administered to children ages 6 to 16 years old. There are four factors: Processing Speed, Freedom from Distractibility, Verbal Comprehension, and Perceptual Organization. The average reliability of the scales is as follows: Full Scale .96, Verbal .95, and Performance .91 (Wechsler, 1991). The WISC-III is shown to have construct, concurrent, and predictive validity.

The WISC-III has been utilized in many studies that prove that the WISC-III alone does not give enough information in order to make educational recommendations for children. For example, Watkins and Glutting (2000) studied 1,118 nonexceptional and 538 exceptional participants from four southwestern suburban school districts in the U.S. Watkins and Glutting found that the WISC-III subtest do not accurately represent students' learning strengths and weaknesses in reading and math.

A second example, a study by Kush et al. (2001) revealed that interpretation of the Verbal, Performance, and Full Scale scores are the best to represent student performance rather than including Processing Speed or Freedom from Distractibility factors. This may be due to the fact that not all 12 mandatory and supplemental subtests are administered. The Mazes subtest was not included in calculating any IQ scores. Kush et al. utilized three samples to draw their conclusions: the standardization white sample (N = 1,543), the standardization black sample (N = 338), and the referred for testing black sample (N = 348). This study did not have a referred for testing white sample. There was a 15-point difference between the standardized white and standardized black students. Referred black students Full Scale IQ scores were lower than the standardized black students.

A third example, a study by Canivez and Watkins (2001) found the Full Scale, score on the WISC-III to be stable after test-retest after 2.87 years internal. There

were 522 participants from 33 states evaluated for special education in the areas of specific learning disability, serious emotional disability, and mental retardation. They found information that contradicted Kush et al. (2001) in that Verbal and Performance scores were not proven to be stable. However, Canivez and Watkins are in agreement with Kush et al., that Freedom From Distractibility and Processing Speed factors are not stable.

The WISC-IV was updated in 2003. The norms are updated to currently match the U.S. census. The Arithmetic, Information, and Picture Completion subtests have been excluded from the core section of the WISC-IV and placed in the supplemental section. In the Coding subtest, new options have been added: free recall, cued digit recall, and cued symbol recall. New subtests added are Word Reasoning (identification of underlying concept once given successive clues), Matrix Reasoning (a partially filled grid is presented and the child has to select the item that properly completes the matrix), Picture Concepts (from two or three rows of objects selection of objects that go together are based on an underlying concept), Letter-Number Sequencing (presentation of mixed series of numbers and letters and the child repeats the numbers in numerical order first and then letters in alphabetical order), and Cancellation (random and structured animal target forms) (Wechsler, 2003).

WECHSLER ADULT INTELLIGENCE SCALE-THIRD EDITION (WAIS-III)

The WAIS-III was standardized in 1997 with population ages 16 to 89 years from the U.S. 1995 census. There is 1-year overlap between the WISC-IV and the WAIS-III. The sample consisted of 2,450 adults. The average reliability coefficient for the WAIS-III ranges from .88 to .97. Conceptual validity of the WAIS-III VIQ is .88, PIQ is .78, and FSIQ is .88 (The Psychological Corporation, 1997; Wechsler, 1997).

THE BIO-ECOLOGICAL MODEL OF INTELLIGENCE

THEORY

There are four assumptions underlying the biocultural perspective according to Armour-Thomas and Gopaul-McNicol (1998):

- (a) The interactions between biologically derived cognitive potentials and forces operating within the child's culture are reciprocal,
- (b) the interdependence of knowledge and cognitive processing in the development of cognitive processing in the development of cognition,
- (c) instruction is a precursor to the development of cognition, and
- (d) motivation as energy activated from both within and outside the person (p. 60).

Armour-Thomas and Gopaul-McNicol (1998) and Gopaul-McNicol and Thomas-Presswood (1998) bio-ecological model have been inspired by the work of Lev Vygotsky's sociocultural theory, Stephen Ceci's bioecological theory, Robert Sternberg's triarchic theory, and Howard Gardiner's multiple intelligences theory. The combined works of these researchers represent the theoretical construct of the bio-ecological model which lends to its credibility.

Lev Vygotsky's sociocultural theory claims that children are evaluated within

their zone of proximal development. Adults or peers can scaffold children's learning.

These concepts are important to Gopaul-McNicol's model and are demonstrated in the test-retest methods utilized in the Wechsler scales.

Ceci's (2001) bio-ecological theory explains that intelligence is affected by breast-feeding, school attendance, and age which interplay between biology and environment. Also, motivation is important to the determination of an individual's intellectual potential. The bio-ecological model involves the child's environment, which should motivate the child to be successful because it is something that is familiar.

According to Sternberg's (1997) triarchic theory of human intelligence explains the relationship between intelligence and

- (1) the internal world of the individual, or the mental mechanisms that underlie intelligent behavior;
- (2) experience, or the mediating role of one's passage through life between the internal and external worlds of the individual; and
- (3) the external world of the individual, or the use of these mental mechanisms in everyday life in order to attain an intelligent fit to the environment. (p. 92)

The triarchic theory has been applied to teaching the learning of vocabulary from context; hence, Gopaul-McNicol's method of contextualization in the Vocabulary subtest of the Wechsler scales.

Finally, Howard Gardiner's theory of multiple intelligences is based on the premise that any competencies that are valued by a culture should be considered potential intelligence. Each of the 10 intelligences (interpersonal, intrapersonal, bodily kinesthetic, logical-mathematical, linguistic, musical, spatial, naturalistic, spiritualistic, and experiential) involves problem-solving and information-processing capacities.

RESEARCH

Armour-Thomas and Gopaul-McNicol (1998) assessed 245 bilingual/bicultural children in the U.S. and from the English/Spanish Caribbean, using the bio-ecological model to intelligence. They found that children tend to score better using this model. They assessed two groups of children ages 6 to 11 years old and 12 to 16 years old during 1991 and 1992 using the WISC-R.

The second-tier of the bio-ecological model of intelligence was also administered on a larger scale outside of the United States. Countries included in this study were Anguilla, Antigua, The Bahamas, Barbados, Bermuda, Dominica, Grenada, Guyana, Jamaica, Montserrat, St. Kitts/Nevis, St. Lucia, St. Vincent, Trinidad and Tobago, Puerto Rico, The Dominica Republic, Haiti, Egypt, Nigeria, England, France, Spain, Germany, India, and China. Gopaul-McNicol was the principal investigator in this study using the bio-ecological model in The Bahamas and the other countries listed previously. Tynes-Jones, research assistant, completed the intelligence testing in The Bahamas in 1999. Tynes-Jones utilized the bio-ecological model with three subtests on the WISC-III with 29

Bahamian children. The age range of children was 6 to 16 years old. The average age was 10 years old. There were 16 males and 13 females. The results were as follows:

WISC-III Subtests	Average Scaled Scores	
	Standard	Potential
Picture Completion	5	6
Arithmetic	7	8
Vocabulary	8	9

The results indicate that Bahamian children do better when the bio-ecological model of suspending time, utilizing paper and pencil, and contextualizing vocabulary are implemented.

ADMINISTERING AND SCORING

There is a four-tier system to the bio-ecological assessment. They are as follows: psychometric assessment, psychometric potential assessment, ecological assessment, and other intelligences.

The first tier is the psychometric assessment. This is the standardized way of evaluating, using the Wechsler Manual. The second tier is the psychometric potential assessment. Gopaul-McNicol and Armour-Thomas (as cited in Castellanos-Perret & Inweregbu, 1999) found that children from non U.S. countries could do significantly better if questions on the Wechsler scales were adjusted. For example, in the Similarities subtest of the WISC-III, "how is an apple and a banana alike" could be changed to "how is an orange and a banana alike". Just as it appears in the WAIS-III, apple can be substituted for familiar fruits (based on the culture), such as, mango or guava. Another item on the Similarities subtest of the WISC-III is "in what way are a piano and a guitar alike?" and on the WIAS-III is "in what way are piano and drum alike?" A child in The Bahamas is more familiar with drums, cowbells, and pianos than guitars.

Some of the subtests are based on speed. Children are penalized when they are slow at problem solving. Based upon the Bahamian culture, some children tend to be slow at responding. The time it takes for a Bahamian student to respond to a task may be slower than an American student as indicated from this study. Students are more concerned with accuracy than speed.

According to Armour-Thomas and Gopaul-McNicol (1998) in the WISC-III Object Assembly subtest only item one is used for teaching if the child got it incorrect. Credit is given to the child under potential. Suspension of time is used when a child goes beyond the allocated time. Credit is also given under psychometric potential.

The Block Design subtest has a similar potential approach as Object Assembly subtest. If the child gets an item incorrect at the beginning on both trails, teach the item and give the item again. Give the child credit under potential if the item is correct after reteaching. Time is suspended when the child is trying the item for a potential score. Also, time is suspended on items that a child finishes after the allocated time has lapsed. For very young children or children with limited English abilities they can be asked to sort concrete objects according to color, size, and shape.

The Picture Completion subtest suspends time and allows the child to continue working beyond 20 seconds. If the child goes beyond 20 seconds they do not get the item correct in terms of standardization, but they will get the item correct if they can give a correct response. The time beyond 20 seconds is recorded. This score is added as the psychometric potential. The Picture Completion subtest cultural/item equivalence can be done. For example, in the WISC-III instead of a fox and elephant, animals that are familiar in The Bahamas, such as, dogs and birds can be substituted. In the WAIS-III, instead of a train substitute it with a plane or a bus, instead of a fireplace replace it with a picture of people inside a house sweating, and the barn in the snow can be replaced with leaves or rain on the barn scene. For the WPPSI-R the child can find objects hidden in the room by the examiner or appropriately place objects in order from biggest to smallest. The Picture Arrangement subtest allows for test-teach-retest, cultural/item equivalence, and suspends time. For example, in the WISC-III begin with the sample item as the manual suggests. If a 9 through 16-year-old child does not pass item three, teach it, and then let the child do it again. Based upon the standardized procedure, the child who fails item three has to be administered items one and two in normal sequence and the child is not allowed to try item three again. If the child gets items one or two incorrect on both trails, then teaching occurs after the second trail. Points are given under potential if the item is correct after reteaching.

On the Arithmetic subtest, finding psychometric potential can be accomplished with extended time and paper and pencil. The examiner can allow the child to read all the questions in the WISC-III. If a child fails an item, allow extra time and then give the child paper and pencil if the item is not correct. For the WPPSI-R, a child can be asked to sort objects according to size or to call numbers out loud while using their fingers or objects.

On the Information subtest, questions can be matched to the child's culture. The examiner has to be familiar with the child's culture. The child can identify objects in the room and describe their function. Questions on the Information subtest can be substituted in the Wechsler scales. For example, what are the colors of the Bahamian, Haitian, Jamaican, Canadian, or British flag? Name two people who have been Prime Minister of The Bahamas, Haiti, Jamaica, Canada, or Britain since 1973? In what direction would you travel if you went from New Providence to Abaco? Who was the first Prime Minister of The Bahamas, Haiti, Jamaica, Canada, or Britain? What are Susan Wallace and Michael Pintard famous for (writer/author question)? Name two houses in the Bahamian parliament. How far is it from London Haiti, Jamaica, or Canada to New Providence? What is the population of The Bahamas, Haiti, Jamaica, Canada, or Britain? When scoring a question like "who was Christopher Columbus?" and a typical response is "he discovered The Bahamas in 1492" Based upon standardized scoring of this question it would be considered incorrect. Based upon the Bahamian history it is correct therefore scored for psychometric potential.

On the Comprehension subtest, the child should be asked to verbally express understanding of an action and consequence of events. Sometimes the examiner might have to reword or find an equivalent question in order to make it culturally appropriate. For example, in the WISC-III "what are the advantages of having senators and congressmen?" can be changed to "what are the advantages of having senators and members of parliament?" In the WAIS-III "why should people pay taxes?" can be replaced with "why should people pay cus-

toms duty?" The Bahamas does not have the tax structure system like the U.S. Also in the WAIS-III "what does this saying mean? "Shallow brooks are noisy" can be replaced with a Bahamian idiom "empty vessels make the most noise." For example, in the WPPSI-R the children may be asked to follow simple commands, such as, throw, walk, or sit.

In the Vocabulary subtest, contextualization of the words can be done instead of asking about the word in isolation. The examiner would tell the child "say the word in a sentence". The examiner can follow the standardized procedure for querying and scoring under potential. Sometimes having to use the Bahamian dialect in order to get the child to understand the word is necessary, for example, "What is a thief?" A child's response may be "I don't know." When that same child is asked, "What is a tie?" The child's response is generally allotted two points under potential. In the Caribbean, words with 'th' are dropped to a single letter 't'. For young children, they could be asked to name all the letters of the alphabet and name objects in the room.

The third and fourth tiers are tasks that the child could not complete under psychometric or potential assessment of the Wechsler scales. This information can be obtained from observation of the child and interviewing parents, teachers, and the child. An example of the third tier (ecological), when a child is able to put a fan together at home or school this proves that the child is able to sequence. The fourth tier (intelligences) can be obtained from a multiple intelligences inventory and interview.

INTERPRETING

The psychometric standardization and the psychometric potential can be interpreted by using the Gf-Gc factors. Writing a paragraph on all nine abilities would give valuable information about the child's performance on the Wechsler. The Gf-Gc theory (Horn & Noll, 1997): fluid reasoning (Gf),

measured in tasks requiring inductive, deductive, conjunctive, and disjunctive reasoning to arrive at understanding relations among stimuli, comprehend implications, and draw inferences..., acculturation knowledge (Gc), measured in tasks indicating breadth and depth of the knowledge of the dominant culture..., short-term memory (Gsm), measured in a variety of tasks that mainly require one to maintain awareness of, and be able to recall, elements of immediate stimulation..., long-term memory (Glr), measured in tasks that indicate consolidation for storage and mainly require retrieval, through association, of information stored minutes, hours, weeks, and years before..., visual processing (Gv), measured in tasks involving visual closure and constancy and fluency in 'imaging' the way objects appear in space as they are rotated and flip-flopped in various ways..., auditory processing (Ga), measured in tasks that involve perception of sound patterns under distraction or distortion, maintaining awareness of order and rhythm among sounds, and comprehending elements of groups of sounds, such as chords and the relations among such groups..., processing speed (Gs), although involved in almost all intellectual tasks measured most purely in rapid scanning and responding in intellectually simple tasks..., correct decision speed (CDS), measured in quickness in providing answers in tasks of nontrivial difficulty..., and

quantitative knowledge (Gq), measured in tasks requiring understanding and application of the concepts and skills of mathematics. (p. 69)

PSYCHO-EDUCATIONAL REPORT WRITING

According to Armour-Thomas and Gopaul-McNicol (1998); Gopaul-McNicol (1997); Gopaul-McNicol and Armour-Thomas (2002); Gopaul-McNicol and Brice-Baker (1998); Gopaul-McNicol and Thomas-Presswood (1998) the psycho-educational report addresses the four-tier bio-ecological model to include: the psychometric assessment, psychometric potential assessment, ecological assessment, and other intelligences. The first tier is the standardized psychometric test results and the psychometric potential test results should be recorded in the report for each subtest, and Verbal, Performance, and Full Scale IQ. The child's strengths and weaknesses as measured by each subtest are emphasized.

The second tier is the psychometric potential assessment. This tier consists of suspending time, contextualizing vocabulary, paper and pencil, test-teach-retest, and item equivalency. At this tier the child's potential or estimated intellectual potential is recorded. When a child goes from low average to average in a subtest this improved change needs to be emphasized.

The third tier is the ecological assessment. The ecological assessment looks at the child at home, on the playground at school, and in the community. These are real life situations away from the testing environment. This tier consists of four components: family and community support, observation, stage of acculturation, and teacher questionnaire. These components are utilized in order to assess the child in three settings: school, home, and the community. At this tier the examiner emphasizes how the child completes tasks in his/her environment that he/she was not able to in the IQ testing environment or even under potential assessment. The final tier comprises other intelligences as outlined in Howard Gardner's theory of multiple intelligences: interpersonal, intrapersonal, spiritual, naturalistic, bodily kinesthetic, experiential, logical-mathematical, linguistic, musical, and spatial.

Recommendations are based upon the findings. For example, if teaching improved psychometric scores, then the recommendation would be one-on-one teaching. If extending time improved psychometric scores, then the child should be given extra time to complete tasks and more opportunities to practice that task. If contextualization improved psychometric scores, then the child should be given authentic tasks. If paper and pencil improved psychometric scores instead of mental computation, then paper and pencil should be allowed in class. If the child displays other intelligences, then these should be explored as teaching strategies in the classroom in order to enrich the child's psychometric potential.

Armour-Thomas and Gopaul-McNicol (1998) recommend that the school psychologist, at the end of the behavioral observation when testing children who are bilingual and/or culturally different, include this statement: "Because this test was not standardized on Caribbean population, the following scores should be interpreted with caution. Thus, these scores should only be used solely as a guideline in assisting school personnel in designing the best program for this child" (p. 165).

ETHICS

There are five ethical and legal concerns to consider in test administration. "Psychologists must strive to ensure that psychoeducational evaluations are multifaceted, comprehensive, fair, valid, and useful" (Jacob-Timm & Hartshorne, 1998, p. 75). Multifaceted means that the psychoeducational assessment of a student must not be based upon one test. A trained school psychologist gathers information from several sources such as school history, health records, observations, interviews, test results and gives meaning to that information. A comprehensive evaluation may include, if appropriate, "health, vision, hearing, social and emotional status, general intelligence, academic performance, communicative status, and motor abilities" (Jacob-Timm & Hartshorne, 1998, p. 75). A fair evaluation would include the selection of the assessment to consider the student's age, gender, language, disability, ethnicity, religion, national origin, sexual orientation, and socioeconomic status. It must be valid. "Validity refers to the concepts of whether a reliable test actually measures what it is supposed to measure. A test cannot possibly be a valid measure of anything unless it is reliable" (Koocher & Keith-Spiegel, 1998, p. 147). The usefulness of the evaluation would aid in the best treatment/instructional plan for the student.

Also, school psychologists should be knowledgeable about validity, reliability, and standardization data of assessment instruments. The most appropriate instrument and technique should be chosen in order to benefit the child. When validity and reliability are not established the psychologist should describe the strengths and limitations of the test results and interpretation (American Psychological Association, 2002). The Wechsler scale fits these criteria in respect to the Bahamian population. Therefore, the bio-ecological model will help to make these instruments more appropriate for the children.

When tests are not well suited for the child, scores are used inappropriately as the only instrument to make a complex decision that affects the life of a child. The psychologist needs to be sensitive to flaws in the instrument and how these flaws can adversely affect a child. It is the psychologist's responsibility to ensure that s/he is sensitive to the client's needs and the information is used for success. The school psychologist reporting on IQ scores alone can not reach a comprehensive conclusion in order to make sound judgments regarding the client (NASP-PPE, IV, B, #3). As the American Psychological Association (APA) 2002 ethical standard 9.02a states, "psychologists who develop, administer, score, interpret, or use psychological assessment techniques, interviews, tests, or instruments do so in a manner and for purposes that are appropriate in light of the research on or evidence of the usefulness and proper application of the techniques" (p. 13).

CONCLUSION

The bio-ecological model, when introduced to school psychologists in graduate training programs once the standardized method of intelligence tests are taught, can be a powerful model to use in the field.

Appropriate test selection for the appropriate student and purpose is vital. Consideration of both linguistic and cultural sensitivity in testing is important. The most documented case that challenged the linguistic and cultural sensitivity in an IQ test was the case of *Larry P v. Riles* (1979) in California. An issue in the

court case revealed that when a psychologist evaluated a student with a similar ethnicity as the normed population of the IQ test the student performed better on the IQ test than a student with linguistic and cultural differences. It is vital that psychologists be aware of the linguistic and cultural differences of the test that they are using and match it with the student. Lack of awareness of the disadvantages of the test can lead to inappropriate interpretation of the data.

The bio-ecological model of intelligence helps to reduce the level of bias in the standardized intelligence tests such as the Wechsler Scales. The school psychologist does not have to buy new intelligence tests but utilize existing tests with the model in mind. This model requires training and additional testing time with the client, but the benefits of this model far outweigh the limitations. The benefits include getting a wider picture of the child by not just the standardized format but the child's psychometric potential, ecological, and multiple intelligences. Hence Bahamian children and those of other cultural backgrounds living in the Bahamas will benefit from this model. A school psychologist should try to provide the best assessment services for all children no matter their cultural background.

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